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Major in Animal Physiology with a Specialization in Ethology

A.S. Leaflet R2475

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Summary and Implications

Concern about the well-being of domesticated animals has increased dramatically in the United States and across many other industrialized countries. The issues involved are complex, and there is widespread disagreement both as to the extent of human responsibilities toward animals and how those responsibilities should be carried out. It is imperative that graduate students are highly trained through education and research endeavors to be able to tackle and work on these issues in their professional career. Therefore the Department of Animal Science at Iowa State University now offers a unique graduate Major in Animal Physiology with a specialization in Ethology along with several new catalogue changes.

Introduction

Within the Animal Physiology major there were two MS and PhD specializations in reproductive physiology and muscle biology respectively (<http://www.ans.iastate.edu/section/physiology/?pg=degree>). However, with the hiring of an Ethologist in 2005 within the Department of Animal Science at Iowa State University there was a need for MS and PhD students who had an interest in Ethology to have their own specialization.

Philosophy of content

Detailed thought went into the courses that were to be offered under the Ethology Specialization. Special attention to the physiology requirements were considered, along with the teaching and seminar requirements (new fall, 2006). In addition attention to how researchers measure animal well-being was incorporated. Although there is no consensus on animal well-being definitions, researchers in the field have agreed that well-being can be measured using a multifactorial approach, which addresses; animal behavior, physiology, performance and health. Thus the new Ethology specialization strives to encompass a flavor of all these measures into the course that the MS and PhD student can take whilst working thought their graduate studies here at Iowa State University.

Creation of a specialization in Ethology

In 2007, a previous Ethology Specialization created by Dr. D. Lay was located. However, several Iowa State

catalogue changes had occurred from the late 1990's to 2006. Departments had dissolved, departmental designators and course numbers had changed and newly approved requirements had been added to the Animal Science graduate requirements (notably a teaching requirement, AnS 590L, MS students must sign up for teaching at least once and PhD students twice) and seminars had been approved by the Animal Science faculty. In the fall, 2008 the College of Agriculture and Life Sciences Graduate Curriculum and Catalogue Committee and the Graduate Dean approved the Ethology specialization (Tables 1 and 2).

New graduate course to offer within the specialization

A new graduate course can be taken spring and fall. The class is Animal Science 537 A – F, titled Topics in Farm Animal Environmental Physiology, Behavior, Stress and Welfare taught on-line. This is an important consideration for the future of teaching farm well-being as getting a core mass of professors and students in one geographical location is difficult. Dr. J. Salak-Johnson achieved her PhD at Texas Tech University in 1995. Dr. Salak-Johnson is an associate professor within the Department of Animal Science at the University of Illinois (began 2001) and specializes in environmental stress and physiology. Dr. M. Sutherland achieved her PhD at the University of Illinois in 2005. Dr. Sutherland is an assistant professor within the Department of Animal Science at Texas Tech University (began 2008) and specializes in immunology, stress and animal well-being. Over the six semesters a different area of farm animal well-being is examined, topics that are taught consist of: Contemporary Animal Welfare Issues, Stress and the Immunity, Measuring Behavior and Welfare, Environmental Stressors, Brain Mechanisms of Stress and Animal Rights and Philosophies. Enrollment has been steadily increasing and although the course is listed as only taking 5 students per semester in the spring and fall of 2008 this number was exceeded.

New Iowa State University Catalogue offerings

AnS 590N – Students will complete Livestock Behavior and Well-being [An S 336] plus additional assignments and AnS 699J – Research in ethology.

Resources

To compliment the successful delivery of this new specialization several other key resources will be utilized by both MS and PhD students. Firstly, faculty members' who have skill sets in this multi-disciplinary area will help serve on the committees, help design experiments, analyze data and write information up for eventual publication. In addition, another ethologist has been

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employed at the College of Veterinary Medicine (Dr. S. Millman; E-mail: smillman@iastate.edu). Combining the veterinary school laboratory facilities and the Department of Animal Science facilities enables a student to collect behavior of animals in a scientific and objective manner. In addition a state of the art behavioral laboratory and resources that are available can be located on the newly designed animal behavior and welfare web page. See link for full details on facilities and opportunities (http://www.ans.iastate.edu/research/animal_behavior/) Financial support for students will continue to be collected through competitive grant writing endeavors and gifts that has thus far funded Dr. Johnson's laboratory.

Outcomes

One MS student has added this to her transcript for graduation in December 2008, and three more MS students will now complete this specialization over the next two years respectively.

Acknowledgements

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Table 1. Approved MS degree in Animal Physiology with a specialization in: Ethology.

<i>Departmental Designator</i>	<i>Course Number</i>	<i>Title of course</i>	<i>Required / Specialization*</i>	<i>Credits</i>
AnS	501	Survey of Animal Science Disciplines	Required	1
AnS	537 (A – F)	Topics in Farm Animal Environmental Physiology, Behavior, Stress and Welfare	Specialization	3
AnS	695	Animal Science Seminar	Required	1
AnS	549	Advanced Vertebrate Physiology I	Specialization	3
AnS	590N	Livestock Behavior and Well-being [An S 336] plus additional assignments.	Specialization	3
AnS	590L	Teaching	Required	2
AnS	633 or 685	Seminar in Animal Reproduction or Seminar in Muscle Biology	Required	1
BBMB	404	Biochemistry I	Required	3
BBMB	405	Biochemistry II	Required	3
STAT	401	Statistics	Required	4
Electives	including AnS 699-J	To be decided	.	6
TOTAL				30

*Required by the Animal Physiology Major. Specialization required by Dr. Johnson to have the Ethology specialization added to their transcripts.

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Table 2. Approved PhD degree in Animal Physiology with a specialization in: Ethology.

<i>Departmental Designator</i>	<i>Course Number</i>	<i>Title of course</i>	<i>Required / Specialization*</i>	<i>Credits</i>
AnS	695	Animal Science Seminar	Required	2
AnS	552	Advanced Vertebrae Physiology II	Required	3
AnS	590L	Teaching	Required	4
BMS	531	Principles of Morphology II	Specialization	4
BMS	537	Neuroanatomy	Specialization	3
Micro	575	Immunology	Specialization	3
STAT	402	Statistical Design and the Analysis of experiments	Specialization	3
Electives	including AnS 699-J	To be decided	.	20
TOTAL				42

*Required by the Animal Physiology Major. Specialization required by Dr. Johnson to have the Ethology specialization added to their transcripts.